SHIP SYSTEM	SUBSYSTEM	MRC CODE
Hull Structure	Doors, Hatches and Scuttles	R-

SYSTEM	EQUIPMENT	RATES	M/H
Structural Closures	Watertight/Airtight/ Ballistic Doors, Hatches and Scuttles	GS-11/12	0.5

MAINTENANCE REQUIREMENT DESCRIPTION

1. Conduct SEMAT assessment procedure for the inspection and chalk test of doors, hatches, and scuttles. (16711, 16812, and 16721)

TOTAL M/H
0.5
ELAPSED TIME
0.5

SAFETY PRECAUTIONS

1. Forces afloat comply with NAVOSH Program Manual for Forces Afloat, OPNAVINST 5100.19 series.
2. Ensure all tag-out procedures are in accordance with current shipboard instructions.
3. Exercise extreme caution when working around open trunk areas.
4. Ensure safety latch/arm is engaged before working beneath hatch/scuttle.

TOOLS, PARTS, MATERIALS, TEST EQUIPMENT

MATERIALS

1. [0245] Chalk assortment, marking, colored
2. [0860] Magnet, permanent
3. [1102] Rags, wiping
4. [1144] Tag, safety
5. [3187] Ruler, plastic, 6"

TOOLS

1. [0611] Hammer, hand, Scaling, 1 LB
2. [1459] Wrench, adjustable, 12" heavy duty, 1.322" jaw open
3. [2271] Flashlight, Type 3, style 1, explosive proof
4. [3103] Screwdriver, flat tip, 10", heavy duty
5. [3886] Screwdriver, flat tip, 6"

MISCELLANEOUS

1. Ship's drawings (as required)

NOTE: Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for stock number identification.

PROCEDURE

NOTE 1: Accomplish assessment before availability, after availability, and before deployment.

LOCATION	DATE
	August 1997

MAINTENANCE REQUIREMENT CARD (MRC)
OPNAV 4790 (REV. 2-82)

PROCEDURE (Contd)

NOTE 2: Man-hours assigned are for one item.

Preliminary

a. Obtain all necessary drawings required to accomplish the assessment of all doors, hatches, scuttles.
b. Review JSNs from the ship's CSMP for discrepancies to be assessed under this procedure.

1. **Conduct SEMAT Assessment Procedure for the Assessment and Chalk Test of Doors, Hatches and Scuttles. (16711, 16812, and 16721)**

NOTE 3: This procedure is applicable to various watertight and airtight doors, hatches and scuttles. Some checks may not apply to all doors. Review and omit any procedural steps not applicable.

WARNING: Ensure all tag-out procedures are in accordance with current shipboard instructions.

a. De-energize circuit and tag "Out of Service," if applicable.

WARNING: Exercise extreme caution when working around open trunk areas.

b. Assess and test doors for the following:

NOTE 4: Assess doors as indicated in steps below and omit steps not applicable. Report any condition requiring repair work.

(1) Paint, dust or other foreign matter on gaskets, knife-edges, wedge pads, hinge washers and pins, dogs, dog spindles, spindle bushings and nuts, packing plungers, setscrews and contact areas of working parts, connecting rod studs and nuts.
(2) Distortion and deterioration of metal surfaces.
(3) Obstructions in way of access to closure.
(4) Loose or missing jamnuts, self-locking nuts on dog spindles and operating handle.
(5) Loose, missing or sheared setscrews for flange dog spindle bushings. Setscrews should be flush or slightly recessed in dog sleeves and tight.
(6) Missing or damaged packing plungers in dog spindles.
(7) Missing, broken, or worn spring clips for dog handles or operation handle.
(8) Cotter pins missing from round nuts on studs in connecting rods.
(9) Cracks, deterioration, open joints, and excessive permanent set over 1/8" in gasket.
(10) Missing hinge adjusting screws and/or lock nuts (airtight doors only).
(11) Missing washers or nuts in connecting link studs. Washers should be installed between dog levers and connecting rods.
(12) Cracked or broken welds on hinge pads, hinge blades, dog sleeves, bulkhead frame, panel stiffeners or connecting rod studs.

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PROCEDURE (Contd)

NOTE 5: Welded connecting link studs with cracked or broken welds shall be replaced with new studs that are press fit into linkage and peened. Welding of new connecting link studs is prohibited. Re-welding of cracked or broken welds on existing studs is permitted only as a temporary repair.

(13) With door open, operate linkage and assess for loose connecting rod studs.
(14) Missing dogging wrench pipes.
(15) Missing or damaged dogging wrench stowage brackets.
(16) Proper operation and condition of safety latches, safety arms, or door hook and bumper assembly.
(17) Locking arm adrift or inoperative.
(18) Corroded, missing or illegible label plates identifying closure number and damage control classification.
(19) Area around label plates for corrosion, dust trails, bulging plates or white powdery residue (WSA coated doors only).
(20) Loose or flaking paint, dust, and corrosion in door panel, bulkhead frame, dog sleeves, connecting rod linkages, and hinge assemblies. Where dog wedges are mechanically fastened, assess area in door panel around wedges for rust. On weather deck doors with WSA coating, assess door panel.
(21) Proper hinge pin material. Material should be brass. If Corrosion Resistant Steel (CRES) hinge pins are found, replace with brass. The use of CRES hinge pins causes wear on hinge pads and yokes.
(22) Proper installation/operation of safety chains or guard ropes. Assess for missing shackles, snap hooks, bolts, or toggle pins.
(23) Loose or worn dog wedges. Mechanically fastened wedges should be tight with no movement allowed. Wedges are worn when it has worn to less than half its original thickness of 5/16" on the center flat portion of the wedge, or if the leading edge of the taper is 1/16" or less.
(24) Proper material for wedges. Material should be aluminum-bronze. If CRES wedges are found, they should be replaced with aluminum-bronze. The use of CRES wedges with CRES dogs causes galling on the contact surfaces and rapidly wears both the dog and the wedge.
(25) Cracked glass in fixed light.
(26) Proper operation of dead light cover over fixed light.
(27) Proper material for hardware on weather deck doors. Dogs, dog spindle nuts, and operating handles should be CRES (non-magnetic). Verify with magnet.
(28) Worn or missing hinge pins, hinge pin collars/nuts, hinge washers, yoke pins, yoke washers, and cotter pins. (Refer to figure 4.)
(29) With the door open, lift door panel toward hinges; excessive play indicates a worn hinge pin or yoke pin.

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PROCEDURE (Contd)

(30) Knife-edge and door frame assessment.
  (a) Open the fitting. Assess the knife-edge for straightness and/or warpage using a straightedge and two lengths of string. See figures 6, 7, and 8. The maximum acceptable variation for knife-edge straightness is plus or minus 1/8 inch. The maximum acceptable warpage of the door frame is 1/4 inch. If frame/coaming warpage is excessive, or if the knife-edge straightness is not within tolerances, initiate action to replace the closure.

(31) Operate door through open,close cycle and assess for binding or excessive play in connecting rod linkage. Binding is caused by bent connecting rods, or excessive stick packing in dog spindle, sleeves. Excessive play indicates worn connecting rod bushings and/or loose/worn connecting rod studs.

(32) Assess operation handle for excessive play. With door open, firmly grasp inside handle (on the linkage side) and hold stationary in maximum open position while moving outside handle towards closed position. Excessive play exists if outside handle obstructs the clear opening, or interferes with swing of door panel.

(33) Assess for worn dog spindle bushings and operating handle spindle bushings. Grasp each spindle and attempt to shake it up and down, and side to side. If movement occurs, then bushings are worn.

(34) Assess for seized bushings. Check each dog assembly by pushing the dog in and out. Straight bushing should move freely and should spring back to rest against the back of the dog. (Q/A doors should have handle in closed position with door open to check dog assemblies.)

(35) Perform chalk test procedure for standard closures with slab-gasket/knife-edge and bevel-edge seals.
  (a) Clean dirt, paint, and excessive silicone compound from gasket surface using wood block or rag.
  (b) Rub chalk on knife-edge.
  (c) Close and dog door tightly. While door is dogged, check for loose dogs or hinge adjusting screws. (Do not slam closure closed.)

CAUTION: Compression of the gasket should not exceed 1/8". Excess compression will damage the gasket, cause difficult operation and also cause rapid wear of moving parts and dog wedges.

  (d) Open door and observe imprint of chalk on gasket. If chalk line is not continuous, closure is not watertight and requires adjustment. Adjust dogs using items 1.c.(1) through 1.c.(7).
  (e) For airtight doors equipped with "bound" hinges, adjust hinge pin adjusting screw as necessary to achieve 100% gasket to knife-edge contact.
  (f) Remove chalk from gasket and knife-edge with rags.
  (g) Repeat steps 1.b.(35)(a) through 1.b.(35)(f) and make proper adjustments until chalk imprint is continuous.

PROCEDURE (Contd)

NOTE 6: If chalk line is centered and parallel to gasket retainer all around, but not continuous, the dogs and/or hinges are out of adjustment. Adjust door and/or hinges in accordance with items 1.c.(1) through 1.c.(7).

NOTE 7: Accomplish steps 1.c.(1) through 1.c.(7) if gasket is installed and dog adjustments are necessary. Omit steps 1.c.(1) through 1.c.(7) if dog adjustments are not necessary.

c. Adjust dogs with gasket in place.
   (1) Loosen all jamnuts or self-locking nuts in dog spindles.
   (2) Close the door but do not dog it down.

NOTE 8: If there is warpage between the door panel and bulkhead frame, the gasket will not contact the knife-edge evenly. Start the dog adjustment in the area where gasket first contacts knife-edge.

   (3) Insert a strip of paper between gasket and knife-edge and dog door. For individually dogged doors, dog only the one being adjusted; one contact surface on the dog should be centered on flat portion of wedge.
   (4) Tighten first jamnut or self-locking nut down until paper cannot be slid out of contacting wedge.
   (5) Tighten first jamnut or self-locking nut down an additional 1-1/8 turns to achieve a 1/8" gasket compression.
   (6) Tighten the second jamnut securely against the first jamnut while holding the first nut with a wrench to prevent movement.
   (7) Operate closure through full cycle of operation several times to ensure smooth and positive dogging action.

NOTE 9: Figures 1 through 4 are provided for information and guidance only.

NOTE 10: This procedure is applicable to various watertight hatches and scuttles. Some checks may not apply to all installations. Review and omit any procedural steps not applicable.

NOTE 11: Because the following items are recurring INSURV reported deficiencies, it is advisable to be on the lookout for the following problems during assessment of emergency escape scuttles:
   (1) Jammed in a closed position.
   (2) Will only partially open.
   (3) Material stacked on top of scuttle preventing opening of scuttle.
   (4) Hinge pins severely corroded and hard to operate.
   (5) Lifting arm adrift or inoperative.
   (6) Scuttle will not lock in an open position.
   (7) Recessed area of scuttle is full of dirt, debris, water and miscellaneous material (blocks operation of hinge pins).
   (8) Access to scuttle blocked by furniture or jury rigged clothing hangers.

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PROCEDURE (Contd)

(9) T-wrench missing.

WARNING: Ensure safety latch/arm is engaged before working beneath hatch/scuttle.

d. Assess and test hatches and scuttles for the following:
   (1) Loose, missing, and damaged parts.
   (2) Paint, rust, and other foreign matter on gaskets, knife-edges, and working parts.
   (3) Binding and difficult operation.
   (4) Distortion and deterioration of metal surfaces.
   (5) Hinge pin wear; ensure pins are properly secured.
   (6) Gasket for cracks, deterioration, hardness, permanent set over 1/8" deep, and gaps due to shrinkage where gasket ends meet.
   (7) Unobstructed access to escape scuttles.
   (8) Loose, damaged or lost hatch/scuttle automatic hatch assembly components, as applicable.
   (9) Missing or damaged safety arms, if applicable.
   (10) Wire rope attachment points for looseness.
   (11) Counter balance springs, spring key, spring key pad, eye bolt, wire rope, and connector for loose connections, corrosion, or damage.
   (12) Eyebolt and nut are secured with cotter pin to prevent it from backing out.

e. Chalk test hatches and scuttles:
   (1) Rub chalk in knife-edge.
   (2) Close and dog closure tightly. Gasket should rest tightly on knife-edge around entire periphery.

CAUTION: Compression of the gasket should not exceed 1/8". Excess compression will damage the gasket.

   (3) Open closure and observe imprint of chalk on gasket. If chalk line is not continuous, closure is not watertight and requires adjustment or repair.
   (4) Remove chalk from gasket and knife-edges with rags.

f. Conduct operational test of hatch/scuttle per MIL-STD-1472C CH. NOTICE 1.
   (1) Operate closure through full cycle of operation several times; ensure smooth and positive dogging action.

g. Assess safety devices for the following, as applicable:
   (1) Cracked or broken welds.
   (2) Missing or damaged safety arms.
   (3) Proper operation and condition of safety latches.
   (4) Proper installation of toggle pin/bolts and chains.
   (5) Proper installation and condition of safety stanchions and lifelines/rails.

h. Ensure dogging wrench is available if required.

NOTE 12: Figure 5 is provided for information and guidance only.

2. **Record all discrepancies identified on applicable SEMAT discrepancy reporting forms (2-K or Material Assessment Form).**

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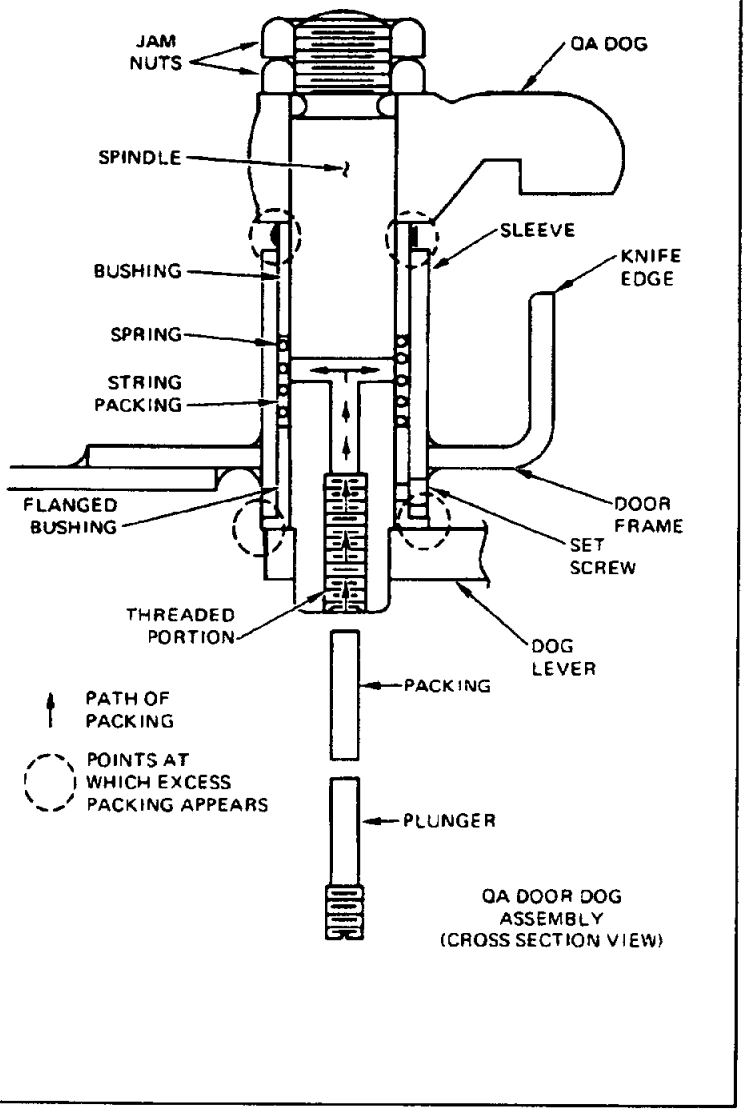
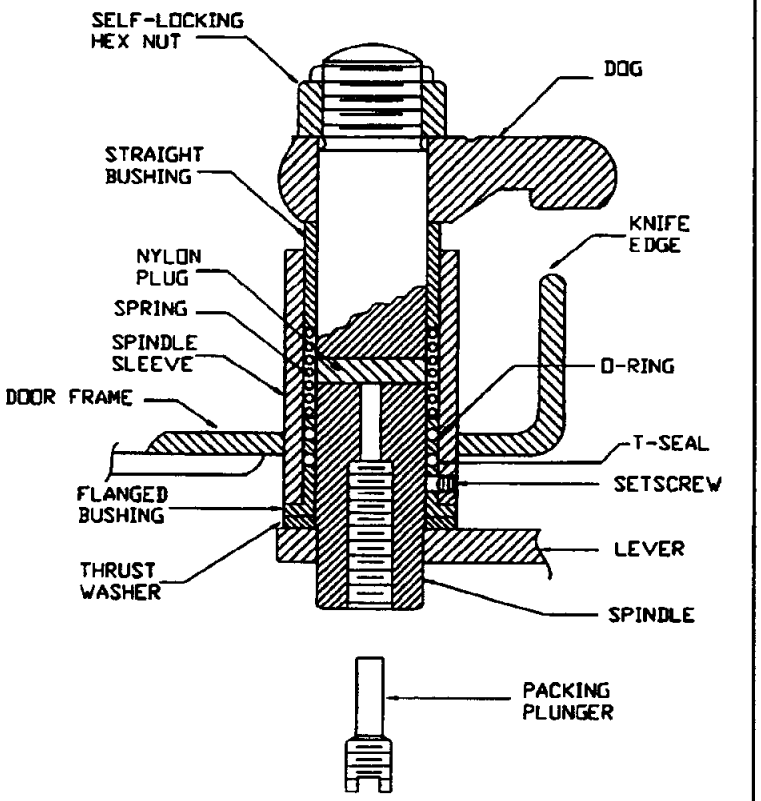

JAM NUTS
QA DOG
SPINDLE
SLEEVE
KNIFE EDGE
BUSHING
SPRING
STRING PACKING
FLANGED BUSHING
DOOR FRAME
SET SCREW
THREADED PORTION
DOG LEVER
PACKING
PATH OF PACKING
POINTS AT WHICH EXCESS PACKING APPEARS
PLUNGER
QA DOOR DOG ASSEMBLY (CROSS SECTION VIEW)

Figure 1



DOOR DOG AND LEVER ASSEMBLY (CROSS SECTIONAL VIEW)
MODIFIED BY MACHALT (ECP 444)

Figure 2

PROCEDURE (Contd)

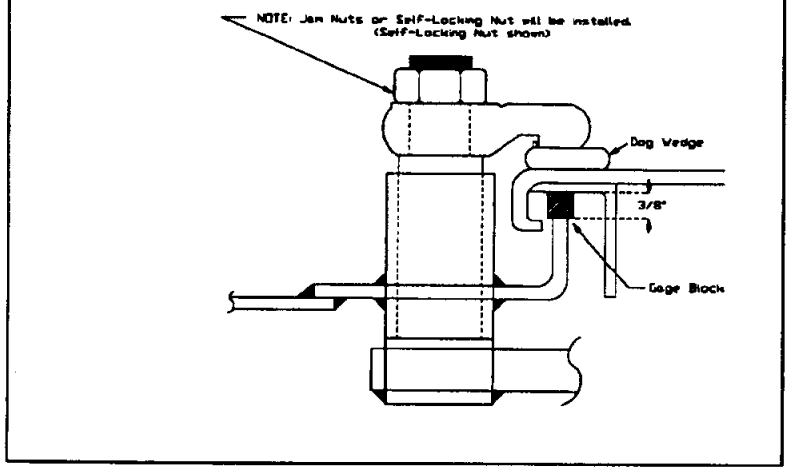


Figure 3

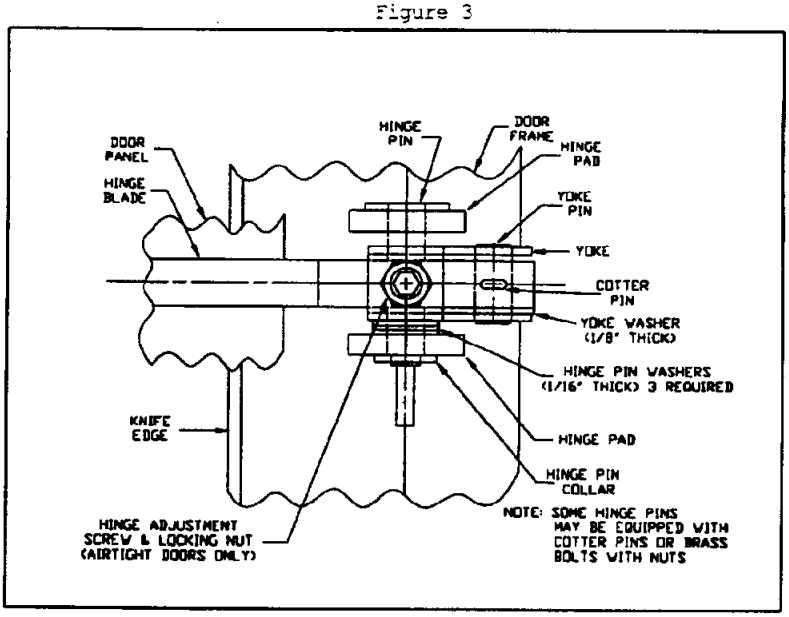
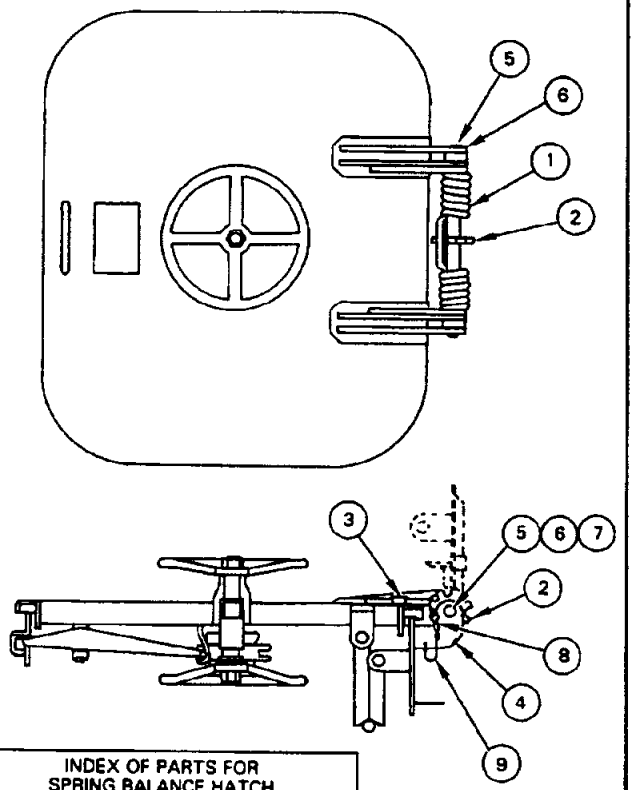


Figure 4



INDEX OF PARTS FOR SPRING BALANCE HATCH	
INDEX NUMBER	PART
1	SPRING
2	SPRING KEY
3	SPRING KEEPER
4	HINGE PAD
5	HINGE PIN
6	HINGE WASHER
7	COTTER PIN
8	EYE BOLT
9	EYE BOLT, WIRE ROPE

Figure 5

PROCEDURE (Contd)

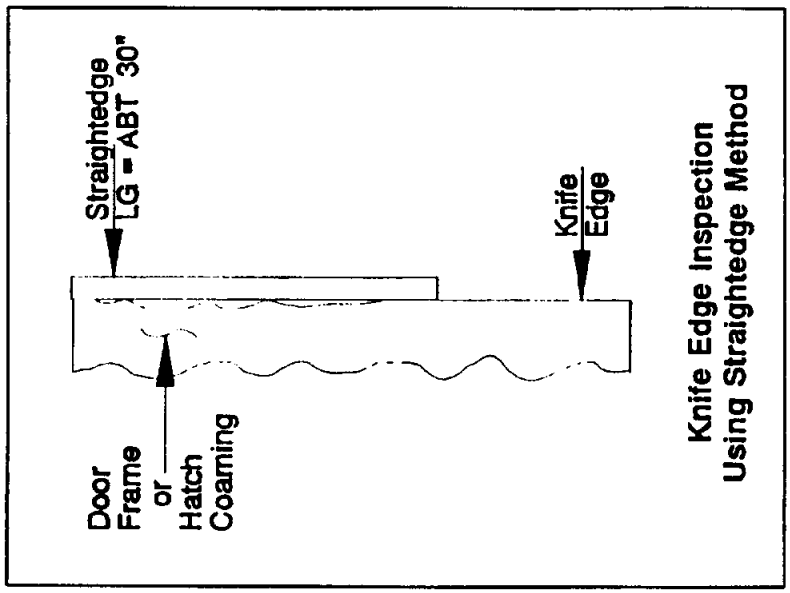


Figure 6

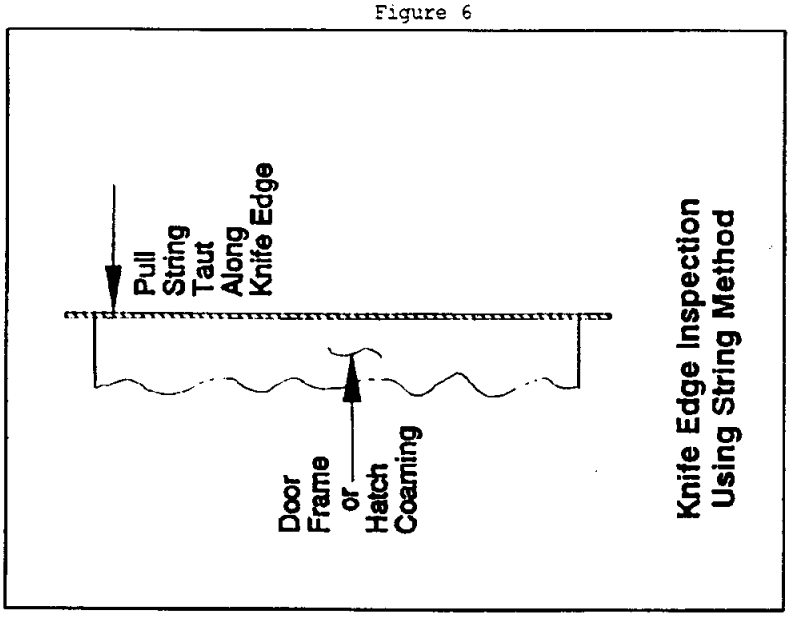


Figure 7

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PROCEDURE (Contd)

Figure 8

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